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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,207	12/18/2006	Seok-Hwan Lee	B-5857PCT 623180-3	7649

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EXAMINER	
NGHIEM, MICHAEL P	
ART UNIT	PAPER NUMBER
2863	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,207	LEE ET AL.	
	Examiner	Art Unit	
	MICHAEL P. NGHIEM	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *17* is/are allowed.

6)☒ Claim(s) *1-3,6-8 and 15* is/are rejected.

7)☒ Claim(s) *4,5 and 9-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3-11-08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The Amendment filed on March 11, 2008 has been acknowledged.

Withdrawal of Allowability

The indicated allowability of claims 1-3, 6-8, and 15 is withdrawn in view of the newly discovered reference(s) to Lai et al. (US 2003/0035097). Rejections based on the newly cited reference(s) follow.

Claim Objections

Claim 4 is objected to because of the following informalities:

- line 4, should replace "(" with -- , wherein --; should delete ")".

- line 5, should replace "(" with -- , wherein --; should delete ")".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3, it is unclear what is “caused by background scattering of laser beams" and what is “exponentially decreasing according to ranges”.

The remaining claims are also rejected under 35 U.S.C. 112, second paragraph, for being dependent upon a rejected base claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Lai et al. (US 2003/0035097).

Regarding claim 1, Lai et al. discloses a method for finding a range (Figs. 1, 6, 7), comprising:

(a) receiving laser beams reflected from a target (step 10, Fig. 1; step 115, Fig. 6), and outputting a corresponding electrical signal (output of 210);

(b) converting the electrical signal into range-finding data (step 30, Fig. 1; step 120, Fig. 6);

(c) sequentially storing the range-finding data (step 40, Fig. 1; step 125, Fig. 6);

(d) adding the stored range-finding data and previously processed and stored accumulated data, and storing results as accumulated data (step 50, Fig. 1; step 130, Fig. 6);

(e) detecting data exceeding a threshold value (P) from among the accumulated data as target signals (paragraph 0038, lines 1-7); and

(f) reading a target range based on the detected target signals (paragraph 0029, lines 9-11; paragraph 0032, lines 10-15), wherein

(a) through (d) are repeated N times, and the accumulated data in (e) are obtained by repeating (a) through (d) N times (flowchart loop, Figs. 1, 6).

Regarding claim 2, Lai et al. discloses canceling a noise component from the electrical signal (claim 2, lines 2-4) and converting the noise-cancelled signal into range-finding data (via step 30, Fig. 1; step 120, Fig. 6).

Regarding claim 6, Lai et al. discloses the target range in (f) is an address of a memory storing accumulated data greater than the threshold value (address of maximum value,

paragraph 0032, lines 10-15) .

Regarding claim 7, Lai et al. discloses a laser rangefinder (200) for finding a range to a target (object, Abstract, line 1) using laser beams (Abstract, lines 1-2), comprising:

- a laser receiver (210) for receiving laser beams reflected from the target (paragraph 0047, lines 3-5) to output an electrical signal (Fig. 7), canceling a noise component provided in the electrical signal (claim 2, lines 2-4), and outputting binary range-finding data (converted data after conversion step 30, Fig. 1);

- a data accumulator (in step 50), including a frame memory, for adding the range-finding data output by the laser receiver and previously accumulated data stored in the frame memory (paragraph 0031, lines 14-17), storing the added results in the frame memory (paragraph 0031, lines 14-17), and repeating the adding and storing operations for an established time (paragraph 0031, lines 11-14); and

- a range detector (220) for producing a target range to the target based on the accumulated data stored in the frame memory (claim 1, lines 21-25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 8, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lai et al..

Lai et al. further discloses:

- regarding claim 3, receiving the laser beams, converting the same into a corresponding photocurrent signal, and converting the signal into a voltage signal (paragraph 0047, lines 6-8), and cancel a voltage component superimposed on the voltage signal (eliminating noises, paragraph 0029, lines 3-4).

Even though Lai et al. des not disclose that the voltage component is caused by background scattering of laser beams, exponentially decreasing according to ranges, how the voltage component is caused does not differentiate the voltage component over the noise discussed in Lai et al.. Thus, how the voltage component is caused has not been given patentable weight.

- regarding claim 8,

- a photodetector (photodetecting means in 210) for receiving the laser beams (315) and outputting a corresponding photocurrent signal (current signal of photo signal 315, paragraph 0047, lines 7-8);

- an amplifier (250) for amplifying the photocurrent signal and converting it into a voltage signal (paragraph 0047, lines 6-8);

- canceling a noise voltage component superimposed on the voltage signal (eliminating noises, paragraph 0029, lines 3-4);

- a filter for filtering the differentiated signal (filtering noises, paragraph 0029, line 4); and

- a signal converter for converting the filtered signal into binary range-finding data (step 30), and outputting the range-finding data for each frame (paragraph 0038, line 8).

However, Lai et al. does not disclose:

- regarding claims 3 and 8, a differentiator for differentiating the voltage signal.

- regarding claim 15, a display for displaying the target range.

Nevertheless, Lai et al. discloses eliminating noises from the external signal (paragraph 0029, lines 3-4). Thus, it would be obvious to incorporate a differentiator for differentiating the external signal from noise signals for the purpose of eliminating noises. Furthermore, Lai et al. discloses outputting the target range (paragraph 0038, line 8). It is common knowledge in the art to provide a display for the purpose of outputting the target range.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Lai et al. with a differentiator for differentiating the external signal from noise signals and a display for the purposes of eliminating noises and outputting the target range.

Allowable Subject Matter

Claims 4, 5, and 9-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 17 is allowed.

Reasons For Allowance

The **combination** as claimed wherein filtering the differentiated signal with a predetermined frequency bandwidth identical to a frequency band of the target signal, wherein the bandwidth satisfies 0.35/t, (t, is a rising time of a laser pulse), and a cut-off frequency satisfies 1/2 r (r is a full width at half the maximum) (claim 4) or establishing a threshold value to satisfy the claimed conditions (claim 5) or the signal converter comprises a zero voltage detector for comparing the filtered signal with a zero voltage, and outputting 1 when the signal is a positive voltage, and 0 when the signal is a negative voltage (claim 9) or the data accumulator further comprises: a shift register for sequentially storing the range-finding data; an adder for adding the range-finding data stored in the shift register and previously accumulated data stored in the frame memory, and storing the added results in the frame memory; a counter for counting range-finding

time; and a timing controller for operating the shifter register and the adder until the range-finding time exceeds the established time, and repeating the storing, operating, and accumulating process of the range-finding data N times (claims 10, 17) or the range detector comprises: a target signal detector for detecting the data exceeding the established threshold value as a target signal from among the accumulated data stored in the frame memory; and a range reader for reading an address of the frame memory storing the detected target signal as a target range (claim 11) or is not disclosed, suggested, or made obvious by the prior art of record.

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (571) 272-2277. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Michael P. Nghiem/

Primary Examiner, GAU 2863

June 16, 2008